

REMARKS

The Office Action dated July 19, 2006, has been received and carefully noted. The following remarks are submitted as a full and complete response thereto.

Claims 1-25 are currently pending, of which claims 1, 7, 13, and 16 are independent claims. Claims 1-25 are respectfully submitted for consideration.

Rejections under 35 U.S.C. 102(e)

Claims 1-2, 4, 6-8, 10, 12-13, 15-17, 19, and 21 were again rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,453,358 of Michels et al. ("Michels"). Applicants respectfully traverse this rejection.

Claim 1, upon which claims 2-6 depend, is directed to a table search device. The device includes a table having a plurality of entries. The device also includes a cache having a subset of entries of the plurality of entries of the table. The device further includes a search engine configured to first search the cache in a first number of search cycles and then search the table in a second number of search cycles based on search results of the cache. The search engine is connected to the table and the cache.

Claim 7, upon which claims 8-12 depend, is directed to a table search system. The table search system includes a table means for storing a plurality of entries. The table search system also includes a cache for storing a subset of entries of the plurality of entries of the table means. The table search system further includes a search engine

means for initially search the cache means in a first number of search cycles and then searching the table means in a second number of search cycles based on search results of the cache means.

Claim 13, upon which claims 14-15 depend, is directed to method for performing a table lookup. The method includes creating a table having a plurality of entries in a search device. The method also includes creating a cache, in the search device, having a subset of entries of said plurality of entries of said table. The method additionally includes searching, by a search engine in the search device, said cache in a first number of search cycles. The method further includes searching, by the search engine, said table in a second number of search cycles based on search results of said cache.

Claim 16, upon which claims 17-21 depend, is directed to a network switch. The network switch includes an ARL table having a plurality of entries. The network switch also includes an ARL cache having a subset of entries of the plurality of entries of the ARL table. The network switch further includes a search engine configured to first search the ARL cache in a first number of search cycles and then search the ARL table in a second number of search cycles based on search results of the ARL cache. The search engine is connected to the ARL table and the ARL cache. A search device includes the search engine and the ARL table.

It is respectfully submitted that Michels does not disclose or suggest all of the elements of any of the presently pending claims.

Michels is directed to a network switching device with concurrent key lookups. The switching device includes multiple binary search engines coupled in series including one or more precursor search engines, and a final stage binary search engine.

Michels describes that it uses pipelining, which is defined as connecting search engines in series. Michels asserts that by pipelining search engines, increased throughput can be achieved. Michels posits that it is another aspect of Michels' invention to permit each of the search engines to perform concurrent source and destination searches of the lookup table.

Claim 1 recites, in part, "A table search device comprising: a table having a plurality of entries," claim 7 recites, in part, "A table search system comprising: a table means for storing a plurality of entries" claim 13 recites, in part, "creating a table having a plurality of entries in a search device," and claim 16 recites, in part, "wherein a search device comprises the search engine and the ARL table." Michels does not disclose or suggest at least these features of the present invention.

The Office Action cited Michels Figure 3 as showing these recitations. Michaels, however, clearly shows Primary Memory 58 (which the Office Action identified as corresponding to the claimed table) as separate and outside of search engine 60 (which the Office Action identified as corresponding to the claimed search device). Thus, Michaels does not disclose or suggest "a table search device comprising a table having a plurality of entries" as recited by claim 1, or the features of the other independent claims, which are identified above.

Indeed, Michaels clearly differentiates between its Stage 1 Memory 70 (which the Office Action identified as corresponding to the claimed cache) which is shown and described as being part of the search engine, and the Primary Memory 58 which is shown and described as separate.

Accordingly, it is respectfully submitted that Michaels does not disclose or suggest all of the elements of any of claims 1, 7, 13, and 16. Claims 2, 4, 6, 8, 10, 12, 15, 17, 19, and 21 depend from claims 1, 7, 13, and 16 respectively, and recite additional limitations. Therefore, it is respectfully submitted that each of claims 2, 4, 6, 8, 10, 12, 15, 17, 19, and 21 recites subject matter that is neither disclosed nor suggested by Michaels. It is therefore respectfully requested that the rejection of claims 1-2, 4, 6-8, 10, 12-13, 15-17, 19, and 21 be withdrawn.

The Office Action responded to the above distinction (as explained in the response filed June 29, 2006) by stating, at page 6, that Applicants should “refer to the rejection of claims 1, 7, 13, and 16.” Applicants respectfully submit that the rejection of claims 1, 7, 13, and 16 is not responsive to Applicants’ argument, because the rejection of claims 1, 7, 13, and 16 does not address the clear distinction in Michaels between the search engine (shown by box 60 in Figure 3) and the primary memory (shown by box 58 in Figure 3). Like the media interface (shown by box 56 in Figure 3), the network cable (shown by arrow 74 in Figure 3), and the port intercommunication logic (shown as box 54 in Figure 3), the primary memory 58 is clearly not part of box 60, i.e. the search engine of Michaels.

The Office Action's comment to refer to the rejection, thus, does not address Applicant's arguments presented in the response filed June 29, 2006.

MPEP 707.07(f) sets forth the Examiner's obligation to answer all material traversed. Specifically MPEP 707.07(f) states that "the examiner should, if he or she repeats the rejection, take note of the applicant's argument and **answer the substance of it.**" (Emphasis added.) The Office Action took note of Applicants' argument, but failed to answer the substance of it. It is essential that the Office Action address each of the arguments presented by Applicants, so that meaningful appellate review is possible. The Office Action, however, does not address Applicants' arguments. Accordingly, if the rejection is again maintained, a response to the arguments is respectfully requested in a new Non-Final Office Action, in order to permit Applicants to have an opportunity to respond to the arguments.

Accordingly, it is respectfully submitted that Michels fails to disclose all of the elements of any of the presently pending claims, and that the Office Action does not provide a substantial basis for refusing to grant a patent, and thus should be withdrawn for each of those reasons.

Rejections under 35 U.S.C. 103(a)

Claims 3, 5, 9, 11, 14, 18, and 20 were again rejected under 35 U.S.C. 103(a) as being unpatentable over Michels. The Office Action took the position that Michaels does not teach that the first number of search cycles used to search the cache is less than the

second number of search cycles used to search the table. The Office Action asserted that it would have been obvious to modify the number of iterations to search a lookup table so that it will take less time for the binary search engine to search a lookup table with 256 entries than searching a lookup table with 64000 entries. Applicants respectfully traverse this rejection.

Applicants respectfully submit that modification of Michels to provide the features discussed above with regard to claims 1, 7, 13, and 16, upon which claims 3, 5, 9, 11, 14, 18, and 20 respectively depend would not have been obvious.

Moreover, with regard to the relative number of search iterations, Michels clearly states that “one aspect of the invention is that the binary search engines divide the binary search of the lookup table by each performing some of the iterations of the overall search. For example, if the lookup table has 64K entries, the binary search engine 66 performs the first eight iterations of the search and binary search engine 68 performs the last eight iterations,” at column 5, line 66 to column 6, line 5. All the other examples in Michels also clearly show the binary search engines sharing equal number of iterations.

As Michels explains at column 5, lines 63-65, although a 64K table may require 16 iterations, a 256 entry table requires 8 iterations to search. Accordingly, one of ordinary skill in the art, following Michels teaching would be motivated to search with two binary search engines, each performing four iterations, if the table had only 256 entries. Accordingly, Applicants respectfully disagree that there is teaching, motivation, or suggestion to modify Michels to provide the claimed invention. It is, therefore,

respectfully requested that the rejection of claims 3, 5, 9, 11, 14, 18, and 20 be withdrawn.

The Office Action responded to the above distinction (as presented in the response filed June 29, 2006) by stating, at page 6, that Applicants should “refer to the rejection of claims 3, 5, 9, 11, 14, 18, and 20.” Applicants respectfully submit that the rejection of claims 3, 5, 9, 11, 14, 18, and 20 is not responsive to Applicants’ argument, because the rejection of claims 3, 5, 9, 11, 14, 18, and 20 does not address the discussion in Michels of balanced iterations.

As noted above, the MPEP 707.07(f) sets forth the Examiner's obligation to answer all material traversed. Specifically MPEP 707.07(f) states that “the examiner should, if he or she repeats the rejection, take note of the applicant's argument and **answer the substance of it.**” (Emphasis added.) The Office Action took note of Applicants’ argument, but failed to answer the substance of it. Accordingly, there is not a substantial basis for upholding the rejection, as Applicants’ arguments regarding non-obviousness are unrebutted in the record. It is, therefore, respectfully requested that the rejection be withdrawn.

Claims 22-25 were rejected under 35 U.S.C. 103(a) as being unpatentable over Michels in view allegedly admitted prior art. The Office Action took the position that Michaels does not teach “embodiment of the table and search engine on a single substrate.” The Office Action took the position that this feature was admitted prior art. Applicants respectfully traverse this rejection.

Claims 22-25 depend from claims 1, 7, 13, and 16 respectively and further limit the scope of those claims. Accordingly, claims 22-25 are patentable for at least the reasons claims 1, 7, 13, and 16 are patentable, as discussed above. The alleged admitted prior art does not, in any way, remedy Michels deficiency with regard to excluding Michels' primary memory 58 from Michels' search engine 60.

Moreover, Applicants respectfully disagree that paragraph [0055] on page 16 of the present application (cited by the Office Action) contains any admission of prior art. Paragraph [0055] of the present application does not even mention the term "prior art," nor is it found in a "background" section (which would not necessarily imply that it was prior art), but is part of the "Detailed Description of the Preferred Embodiments" beginning on page 5, with paragraph [0011] and concluding on page 16, with paragraph [0056].

Furthermore, paragraph [0055] states "A person ... would be able to implement the various modules ... etc. ... unto a single semiconductor substrate, **based upon the architectural description discussed above.**" (Emphasis added.) Accordingly, paragraph [0055] clearly indicates that single semiconductor substrate feature is dependent not on the general knowledge of one of ordinary skill in the art, but upon the disclosure of the present application. Thus, the single semiconductor substrate feature cannot possibly be considered admitted prior art.

Moreover, even if the semiconductor substrate feature were prior art, the Office Action has failed to provide proper teaching, motivation, or suggestion to modify Michels

to include such a feature. As MPEP 2142 states “Knowledge of applicant’s disclosure must be put aside in reaching this determination [of obviousness] The tendency to resort to “hindsight” based upon applicant’s disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.” In this situation, the Office Action has impermissibly relied on Applicants’ disclosure both for the teaching of the single semiconductor substrate feature, and for the motivation, teaching, or suggestion to modify the disclosure of Michels to include such a feature. Rather than being based on the prior art, the rejection is based on Applicants’ disclosure, and thus should be withdrawn.


Conclusion

For the reasons explained above, it is respectfully submitted that each of claims 1-25 recite subject matter that is neither disclosed nor suggested in the cited art. It is therefore respectfully requested that claims 1-25 be allowed, and that this application be passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, Applicants’ undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,


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